

INDUSTRIAL TECHNOLOGY CONSTRUCTION

RELATED ACADEMIC SKILLS: WHAT THE VOCATIONAL INSTRUCTION SHOULD REINFORCE:

	ACADEMIC AREA	INSTRUCTIONAL LINKS
OCCUPATIONAL COMPETENCIES:		
1. Comply with shop and equipment safety rules (OSHA).	Language Arts	Comprehends/information oral-written/rationale
	Science	Applies/uses/laboratory techniques/safety
	Free Enterprise	Describes/explains/government impact/cost/regulations
2. Inspect workplaces for safe working environment and report unsafe conditions.	Language Arts	Comprehends/information oral-written/rationale
	Language Arts	Presents/informal speech/information supplying
3. Correct safety hazards.	Science	Applies/uses/laboratory/safety
	Language Arts	Comprehends/information oral-written/rationale
4. Identify the role and function of building codes and inspectors.	Language Arts	Comprehends/information oral-written/rationale
	Free Enterprise	Describes/explains/government impact/cost/regulations
5. Identify climbing equipment and demonstrate the setup ladders, ladder jacks, planks, and scaffolds	Language Arts	Comprehends/information-written/rationale
	Science	Applies/uses/laboratory instruments-techniques
6. Clean and maintain work area and leave in safe condition.	Language Arts	Comprehends/information oral-written/rationale
	Language Arts	Attends/directions/tasks
7. Identify career opportunities available in the construction industry.	Free Enterprise	Identifies/job opportunities/emerging fields
8. Follow tool check out and maintenance procedures including reporting of equipment failures.	Language Arts	Comprehends/information oral-written/rationale
	Language Arts	Presents/informal speech/information supplying
9. Receive, inspect, stack, and properly store equipment, materials, and supplies on site.	Math	Computes/addition-subtraction-multiplication-division
	Language Arts	Collects/organizes/information oral-written/classifications

10. Complete basic time card.	Language Arts	Composes/forms/time card
	Math	Computes/addition-subtraction-multiplication-division
11. Interpret a materials list.	Language Arts	Comprehends/information-written
12. Maintain and utilize basic hand and power tools properly such as hacksaw, circular saw, hand saw, screwdrivers, drills and bits, hammers, saber saw, reciprocating saw, chisels, jointer, planer and file.	Science	Applies/uses/laboratory instruments-techniques
13. Cut material to specified dimensions and shape.	Math	Calculates/measurement precision
	Science	Applies/uses/laboratory instruments-techniques
14. Install and remove fasteners properly (i.e., nails, screws, and anchor bolts).	Science	Applies/uses/laboratory instruments-techniques
15. Demonstrate proper shoveling and lifting techniques.	Science	Applies/uses/laboratory instruments-techniques
16. Measure and compute using fractions and decimals.	Math	Computes/addition-subtraction/multiplication-division/decimals/fractions
17. Measure accurately and use the following instruments: ruler, tape measure, chalk line, level, transit, square, volt meter and amp meter.	Math	Calculates/measurement/precision
	Science	Applies/uses/laboratory instruments-techniques
18. Explain the cost of doing a job to include labor, tools, materials and overhead and their relationship to profit.	Math	Solves/problems/fractions, decimals, percents
	Math	Calculates/unit measure/price
	Free Enterprise	Identifies/cost factors
19. Compute the quantity of commonly used materials needed for a job (e.g., area, cubic area, linear measurement).	Math	Computes/addition-subtraction-multiplication-division
	Math	Calculates/measurement/precision
20. Explain the importance of estimating to the construction trade.	Math	Estimates/expected outcomes
	Free Enterprise	Identifies/cost factors
	Language Arts	Identifies/information-written/outcomes/solutions
21. Explain how to prepare a building site to include the following: Establish elevation reference points from bench mark; establish footing grades; locate and square corners; install batter boards; set grade stakes; lay out building using	Math	Solves problems/generate transit.conclusions
	Language Arts	Comprehends/information-written/rationale

	Language Arts	Identifies/information-written/outcomes/solutions
22. Explain all components of preparing foundations and footings.	Language Arts	Comprehends/information-written/rationale
	Language Arts	Identifies/information-written/outcomes/solutions
23. Build forms for concrete including the erection of plywood panel wall forms to include anchor bolts, bulkheads, and keyway on an appropriate footing.	Science	Applies/uses/laboratory instruments-techniques
	Math	Measures/direct/distance
24. Pour, screed and finish concrete.	Science	Applies/uses/laboratory instruments-techniques
25. Strip and clean forms.	Science	Applies/uses/laboratory instruments/techniques
26. Explain and demonstrate bonding of masonry walls.	Science	Describes/chemical reactions
	Language Arts	Comprehends/information-written/purpose
	Language Arts	Identifies/information-written/outcomes/solutions
27. Cut bricks using masonry saw and brick hammer.	Science	Applies/uses/laboratory instruments-techniques
28. Construct brick veneer walls including mixing mortar by hand and tooling joints.	Language Arts	Comprehends/information-written/purpose
	Science	Applies/uses/laboratory instruments-techniques
29. Explain joint finishes.	Language Arts	Comprehends/information-written/purpose
30. Clean brick walls.	Language Arts	Comprehends/information-written/purpose
	Science	Applies/uses/laboratory instruments-techniques
31. Identify parts and materials using a suppliers' and manufacturers' catalog/manual. Uses/text resources/manufacturers' manual	Language Arts	
32. Lay out structural members on center.	Science	Applies/uses/laboratory instruments-techniques
	Math	Measures/direct/distance
33. Identify the parts of a structure from a cross-section on a blueprint.	Language Arts	Comprehends/information-written/purpose
	Math	Interprets/charts/tables/graphs

34. Identify basic materials for particular trade or process.	Language Arts	Identifies/information-written/main idea
35. Identify different types of exterior finishes (i.e., cornice, door, window, siding, fascia, soffit).	Language Arts	Identifies/information-written/main idea
	Language Arts	Evaluates/information-written/relationship of ideas
36. Identify the pro's and con's of exterior finishes (e.g., stucco, wood, masonry, aluminum, vinyl).	Language Arts	Identifies/information-written/main idea
	Language Arts	Evaluates/information-written/relationship of ideas
37. Identify different types of interior finishes (i.e., molding trims, cabinets, doors, hardware).	Language Arts	Identifies/information-written/main idea
	Language Arts	Evaluates/information-written/relationship of ideas
38. Mitre and install molding trim.	Science	Applies/uses/laboratory instruments-techniques
	Math	Measures/direct/angles/distances
39. Identify types of roofing systems including common standards associated with roofing (i.e., flashing, penetrations, and installation).	Language Arts	Identifies/information-written/main idea
40. Demonstrate proper installation procedures and flashing of a three tab shingle system.	Science	Applies/uses/laboratory instruments-techniques
	Language Arts	Comprehends/information-written/rationale
41. Identify the side wall and ceiling insulations, vapor barriers, ventilation and air infiltration.	Language Arts	Comprehends/information-written/rationale
42. Identify parts of a stair and compute rise, run, and headroom.	Math	Computes/slope of line
	Language Arts	Comprehends/information-written/purpose
	Math	Solves problems/fractions/decimals/ratios/percents
43. Splice a wire correctly. instruments-techniques	Science	Applies/uses/laboratory
44. Wire and diagram the following switching instruments- techniques	Science	Applies/uses/laboratory
	Language Arts	Composes/visual aide/diagram
45. Identify and explain ground fault protection, and where they are required.	Language Arts	Comprehends/information-written/rationale
	Science	Describes/electricity/ground
	Free Enterprise	Describes/explains/government impact/costs

46. Identify types and sizes of wire, wire coverings and appropriate short circuit protections.	Language Arts Free Enterprise	Identifies/information-written/main idea Describes/explains/government impact/costs
47. Identify types and sizes of electrical conduits and demonstrate connection techniques.	Science Science Free Enterprise	Applies/uses/laboratory instruments-techniques Describes/electricity/conductors/insulators Describes/explains/government impact/costs
48. Demonstrate and compute the use of Ohm's law.	Math Science	Solves problems/formulas Describes/electricity measurement/Ohm's law
49. Identify the method of transporting electrical power from generating station to utilization locations (i.e., series, parallel, single phase, three phase systems and common voltages).	Science Science Science`	Describes/electricity generating/transformer Describes/electricity measurement/voltage-ampere Describes/electricity/parallel-series circuit
50. Draw and explain a simple motor start, stop ladder diagram and schematic. aide/schematic	Science Language Arts	Applies/uses/models/schematics Composes/visual
51. Diagnose malfunctions of simple electrical systems using test and measurement equipment and repair.	Language Arts Science	Comprehends/information-written/purpose Applies/uses/laboratory instruments-
52. Read and interpret information given on motor nameplates.	Language Arts Language Arts	Uses/text resources/nameplates Comprehends/information-written/purpose
53. Explain the proper procedures for preparing a surface for finishing and selecting a proper finish (i.e., wood, metal, and masonry).	Language Arts	Comprehends/information-written/rationale
54. Cut, prepare, and join plumbing pipe such as copper, threaded and plastic.	Science	Applies/uses/laboratory instruments-techniques
55. Identify anchors, hangers and supports and their appropriate use of each trade.	Language Arts	Comprehends/information-written/purpose
56. Explain the installation of water faucet and water closet replacement.	Language Arts	Identifies/information-written/main idea

57. Observe the installation and connection of an electrical service entrance and breaker box.	Science Language Arts	Describes/electricity/installation Comprehends/information oral-written/purpose
58. Explain the difference between the components and operation of the following HVAC systems: Steam, hot water, forced air and unit ventilation,	Language Arts Language Arts	Evaluates/information-written/air conditioning, and solar systems. Comprehends/information-written/purpose relationship of ideas
59. Identify the plumbing system in a structure (i.e., ventilation, sewage, portable water, etc.).	Language Arts	Comprehends/information-written/purpose
60. Identify the components and functions of sanitary and storm sewer systems in a community.	Language Arts	Comprehends/information-written/purpose
61. Explain the use of earth moving site preparation equipment in preparing construction sites.	Language Arts	Comprehends/information-written/purpose

LEADERSHIP COMPETENCIES:

1. Follow directions. written	Language Arts	Comprehends/information oral-written
Language Arts	Attends/directions/task	
2. Organize an event. oral/written	Language Arts	Collects/organizes/information
	Language Arts	Evaluates/information-oral
3. Communicate effectively at all levels. writing	Language Arts	Adapts/strategy/listening-speaking-writing
4. Utilize time effectively. resources	Free Enterprise	Identifies/cost factors/human
habits/methods	Language Arts	Applies/uses/study
5. Prioritize series of tasks. written/sequence	Language Arts	Composes/edits/draft oral-written/sequence
6. Define goals.	Language Arts	Describes/purpose strategy
7. Work effectively with others.	Language Arts	Adapts/style
8. Listen effectively.	Language Arts	Adapts/strategy/listening
9. Resolve conflict. purpose/situation	Language Arts	Adapts/diction/audience-purpose/situation
10. Adapt to environment/situation.	Language Arts	Adapts/style

JOB GETTING, JOB KEEPING COMPETENCIES:

1. Identify requirements for a job. written/main idea	Language Arts	Identifies/information-
2. Complete required forms correctly.	Language Arts	Composes/edits/forms/documents
3. Write application letter.	Language Arts	Composes/letters/business
4. Evaluate job offer. written/appropriateness	Language Arts	Evaluates/information-
5. Interact with others in a courteous and tactful manner	Language Arts	Adapts/diction/audience- purpose/situation
6. Cooperate with others.	Language Arts	Adapts/diction/structure
7. Accept individual differences.		
8. Respect the property of others.		
9. Organize thoughts and clearly expresses point of view.	Language Arts	Adapts/strategy/speaking
10. Organize thoughts and writes clearly.	Language Arts	Adapts/strategy/writing
11. Exhibit dependability.		
12. Demonstrate punctuality.		
13. Ask for help when needed.		
14. Accept new challenges.		
15. Accept supervision willingly.	Language Arts	Attends/directions/tasks
16. Adapt to change/demonstrates flexibility.		
17. Manage time effectively. habits/methods	Language Arts	Applies/uses/study
18. Follow rules and regulations.	Language Arts	Comprehends/information- written/rationale
	Language Arts	Attends/directions/tasks
19. Produce quality work.		
20. Work within guidelines.	Language Arts Science	Attends/directions/tasks Applies/uses/laboratory instruments/techniques
21. Take responsibility for mistakes and/or good work.		

22. Comply with safety and health rules.	Language Arts	Comprehends/information-written/rationale
	Science	Applies/uses/laboratory techniques/safety
	Free Enterprise	Describes/explains/government impact/costs/regulations
23. Utilize equipment correctly.		
24. Maintain clean and orderly work area.		
25. Demonstrate personal hygiene and cleanliness and proper physical condition.		
26. Take pride in self and work.		
27. Explain the concept of profit.	Free Enterprise	Describes/explains/economic concepts

ENTREPRENEURSHIP COMPETENCIES:

1. Identify skills required of a business owner. written/main idea	Language Arts	Identifies/information oral-
	Free Enterprise	Describes/explains/economic concepts
2. Recognize relevant, ethical issues in business.	Language Arts	Comprehends/information written-oral
	Free Enterprise	Describes/explains/economic concepts
3. Analyze the contents of a business plan.	Language Arts	Evaluates/information-written/appropriateness
	Free Enterprise	Describes/explains/economic concepts
4. Recognize the importance of technical assistance.	Language Arts	Comprehends/information written-oral/main idea
	Free Enterprise	Describes/explains/economic concepts
5. Explain types of business ownership and organizations.	Language Arts	Comprehends/information written-oral/main idea
6. Identify factors in obtaining finances for a new business.	Free Enterprise	Describes/explains financing
	Free Enterprise	Describes/explains/economic concepts